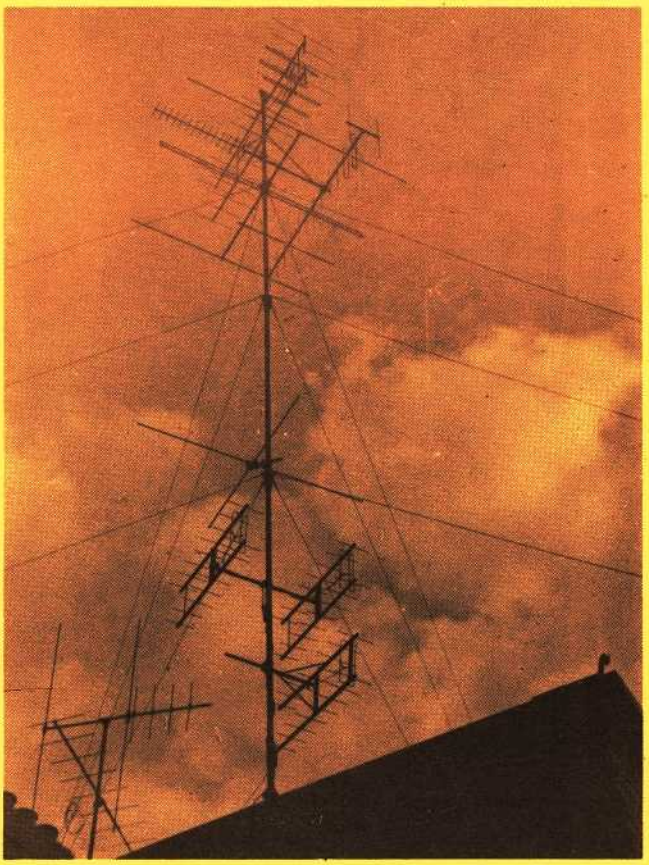

CQ-TV

no 58

The Journal of the British Amateur Television Club

THE BRITISH AMATEUR TELEVISION CLUB

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GENERAL INFORMATION

Introduction.

The club was founded in 1949 to inform, instruct and co-ordinate the activities of amateur radio enthusiasts experimenting with television transmission, and to liaise with other enthusiasts engaged on similar work overseas. The club is affiliated to the Radio Society of Great Britain, and has a membership of over 800 at the present time. Of these, about one third reside abroad; in particular, there is much amateur activity in Australia, Canada, France, the Netherlands, and the U.S.A.

Experiments carried out by BATC members have been mainly in two directions: R.F. and video. As few members have the resources to build both sorts of equipment, many have combined to form constructional groups, to hold lectures, and to take part in local exhibitions. There are local groups of this type in various places. The Hon. Secretary will be pleased to let you know the names and addresses of members in your district.

Club Standards.

On the video side, the standards recommended are such that a normal domestic TV set can be used as a monitor, with waveforms similar to BBC-ITA. For interchangeability, members are recommended to arrange all video outputs at the one volt level, whites positive syncs negative; pulses at the two volt level negative going with all signals at 75 ohm impedance. Belling-Lee plugs and sockets are preferred.

Slow-Scan Picture Transmission.

Another branch of the hobby has become popular: slow-scan television. The line and frame rates (25 c/s and one frame in 5 seconds) are sufficiently slow to permit pictures to be tape-recorded or transmitted, using band widths of the order of three or four kc/s only.

Transmitting Licence.

On the radio side, the experimenter must hold a GPO amateur vision licence, costing £2 per annum, but not requiring a knowledge of morse. Operation is permitted in the 70 cm band and on shorter wavelengths. Full details can be obtained from the GPO Radio Branch, St. Martins le Grand, London, E.C.1.

Camera Tubes.

Vidicon camera tubes, rejected by the manufacturers for minor blemishes are available to Club members for a nominal price and can be sent to any part of the world. Reject monoscopes are available in the U.K. only for £7.10s. information on the procedure for ordering a tube, and for ordering vidicon scan and focus coils can be obtained from the Hon. Secretary.

BATC NEWS FROM THE NORTH & AUSTRALIA

AMATEUR TELEVISION ACTIVITY IN THE NORTH

The cover photograph shows the splendid array of Steve Birkill at Barnsley, Yorkshire. Steve is now licensed G8AKQ and G6ABK/T. His equipment consists of an interlaced 405 line flying spot scanner with transistorised video amplifier and a 35 watt QQVO3-20A transmitter operating on 428 Mc/s. His receiver is a Bush TV 62 with AF139-PC88-PC86 into I.F. He also has receivers for all standard bands, as he is an "old timer" in the field of broadcast DX-TV, having identified 199 stations in 23 countries since 1961. He finds that bands 3 and 4 are a perfect early warning to 70 cm. openings. His aerials consist of a 60 ft. rotatable mast 400 ft. above sea level.

Pictures have been received from G6ILD/T, G6-PGF/T, G6KKD/T and G6NOX/T, and contacts made (in sound) with G6ILD/T and G6PGF/T. Pictures can be locked from G6ILD/T over the 75 mile path under any conditions, and contacts continue in sound with the "north-east net" (G6ILD, G3KJX, G2BDQ) on Saturday evenings at 10 p.m.

During September, a 3" Image Orthicon channel was operated at Manchester University Union during Freshers' Week by Dave Graham, G6ABN/T (home QTH Tadcaster, Yorks.), Steve Gilbert, G30AG, Frank Coakley and Steve Birkill. A 35 Mc/s. coax. distribution was used, to receivers about the building. Debates, programmes and commercials were televised, the only fault occurring being failure of the Image Focus line in one of the camera cables. The second camera channel is now being made operational.

Other stations in the Yorkshire area include G6-AAR/T (Pontefract), who should be transmitting pictures soon, and G8AAN (York) who should be able to receive pictures by now.

Yorks. 70 cm. night is Wednesday. About 6 stations are on, in sound. Steve's sound frequency is 432.55 Mc/s. He would also appreciate tests with members in the area who can RX 70 cm. pictures.

AMATEUR TELEVISION ACTIVITY IN SOUTH AUSTRALIA

by Dick Ashton

Amateur T.V. activity in VK5 (South Australia) is essentially confined to the metropolitan area of Adelaide, the State capital. Active amateurs are (in alphabetical order):-

John Ingham VK5ZDZ/T, Maitland Lane VK5AO/T, Allan Nation, Andrew Pierson VK5ZBP/T, and George Usher VK5ZEY/T.

The unofficial headquarters of the group is at the Usher home at Goodwood where George has a 3" Image Orthicon with a $4\frac{1}{2}$" in the process of being built, a vidicon telecine with 4-way solenoid operated multiplexer for 35mm and 16mm film, 35mm slides and a spare position which is usually a clock. The equipment room could not really have much more gear in it, as it houses two I.O. C.C.Us., telecine C.C.U. Twin slaveable S.P.Gs., automatic vision mixer, control desk with (sometimes) two operators, extensive sound facilities in the form of tape deck and turntables, microphones (transmission and talk-back), 70cm Txs., 576Mc TX (now dismantled), 2 metre and 6 metre communication equipment, and a large lattice tower which supports the various arrays used. This is unfortunately resonant at the frequency of one of our radio stations, and produces queer-looking video interference at times.

Emphasis has been placed on interchangeability of pieces of equipment owned by members; for example, the same types of plug are used throughout for the same purpose.

The group boasts an OB vehicle; this is a caravan rebuilt by John Ingham, not as yet fully completed, but fully operational, as proved on several memorable occasions in 1965. SPG, Vidicon camera and CCUs, four 6" preview monitors, 17" off air/link receiver/line monitor, 6 metre and 2 metre gear, and a very useful camera platform which will take one IO or (just) 2 vidicons; "just" is correct, as the writer knows from experience when panning violently one day!

Maitland Lane has a transistorised SPG and a valved vidicon, and was experimenting with a flying-spot scanner.

Allan Nation has a fully transistorised vidicon, SPG and four-channel "normal" type of vision mixing amplifier. His vidicon has a 3" viewfinder which is a great advantage. Someone got hold of an iconoscope, but unfortunately one of the welds inside gave out at a crucial moment.

OBs. occur at random intervals, with as many available people participating as possible; the last was at the annual prize-giving and social held by the Apprentice training school at the Weapons Research Establishment on the Saturday before Christmas. We arrived at about 1, and had rigged by 5, a great feat as we had to cut to length and terminate every drive, sync and vision cable to suit the locality;

George's IO and Maitland's and Allan's vidicons were used in conjunction with various gear and monitors provided by owners. It was a great success until in the middle of the VIP speech the mains (which were already on a variac) had fallen to about 190v into the PSUs; stabilisers gave up the ghost and so did the IO. Soon after someone tripped over the IO dolly, and the camera ended up in a heap of broken glass, chopping a power cable in half on its way down! Believe it or not, the only casualty was part of the lens system on the slide attachment mounted on the lens turret.

The occasion of the Royal Adelaide Show in September each year is the highlight of the ATV calendar. 1965 saw continuous transmission from 10 am to approximately 10 pm for the week of the show, consisting of test programme until about 6.30 with slides and films when possible, and then live studio presentation with two separate OBs and various amateur talent productions including a local band. The set up at the showgrounds consisted of conventional receivers with UHF CONVERTORS (not tuners, as we don't broadcast commercially in the UHF bands), with Andrew Pierson answering the general public's questions which ranged from almost sensible ones to the completely ridiculous. An unenviable task which he did very well, and no doubt he will be "volunteered" to do it again! Transmission from OB to base was 432 mc app DSB $5\frac{1}{2}$ mc intercarrier (subcarrier) FM sound. Base to showground was 442 mc DSB vision, and modulated light beam (200 yards line of sight) for sound so that we could send music to accompany slides, etc. Normally transmission from George's gear is subcarrier sound with VSB shaping filters to allow the "steam" merchants some of the band to themselves!

The first OB was of an amateur league match of (Australian rules) football, with first class link reception in the afternoon; it ended in a thunderstorm during de-rigging. The second was an evening OB of Scalectrix "slot car" racing from a club across the city about 6 miles away, and signal was found to fade a great deal. Lighting was also a problem with vidicons, but naturally (!) we got the bugs out in the end after some very anxious moments.

Activity is confined to 420-450 mc now; 576 was used about a year ago, and prior to that 2 years or so ago we had a 288 mc band which made life simpler. But alas the PMG took it away and allocated it to some other organisation.

Colour experiments are going great guns; a very successful series of experiments using frame sequential finished some months ago. Several shadow mask tubes are on their way, and there is also interest in either the Ampex or Jap home VTR.

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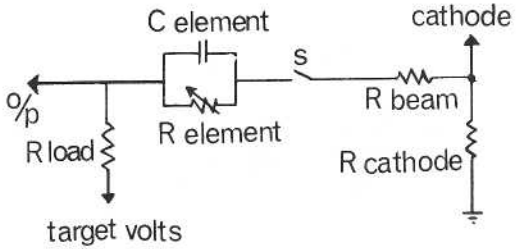
some notes on the VIDICON TUBE

Tube Description

The tube consists of a glass envelope approximately one inch in diameter and six inches long. It has a flat window sealed to it at one end. This window has a transparent conductive coating. This coating acts as the signal plate. The signal plate is covered by a layer of photo-conductive material (generally amorphous antimony trisulphide). This forms the light sensitive target. The target is extremely thin and its resistance is considerably lower front to back than across the target face. Because of this, the target can be considered to be made of discrete elements. The resistance of these elements varies with the amount of light which falls on them.

At the other end of the tube is an electron gun which produces the scanning beam. An ion trap mesh is mounted on top of the last electrode (the wall anode). This mesh produces a strong uniform decelerating field in front of the target.

The equivalent circuit of a single element is shown. Assuming no light on the target - when the beam scans the element (i.e., S closes) the beam charges C element to cathode potential. Thus, each element is brought to cathode potential until the whole target is at that potential. A positive voltage is applied to the signal plate. This gives



C element	-	the capacitance across the element.
R element	-	the element resistance. This varies with the amount of light which falls on the element.
R beam	-	is the effective resistance of the beam.
R cathode	-	is the cathode load.
R load	-	is the signal resistance.
S	-	when the beam scans the element a switch is effectively closed connecting the element to the cathode via R beam. S represents the switch.

C element a charge. When light falls on the element, R element becomes more conductive and C element discharges. This happens to every element. By the next time the beam scans the target a charge pattern has been formed which corresponds to the image falling on the face of the tube. The beam then restores each element to cathode potential and the charge pattern is allowed to form again before the next scan. The excess electrons from the beam are drawn to the mesh and wall anode which are held at a high potential (300 volts). Thus the current which flows in R load corresponds to the light which has fallen on each element in turn.

Beam Current

If insufficient beam current is used, C element will not be restored to cathode potential by the beam on the brighter parts of the picture. This produces white crushing on the picture.

If excessive beam current is used defocusing occurs. Thus, only the minimum beam current - enough to accommodate the high lights - should be used.

Target Voltage

The higher the target volts, the greater the potential difference across C element. This effectively increases the sensitivity of the tube.

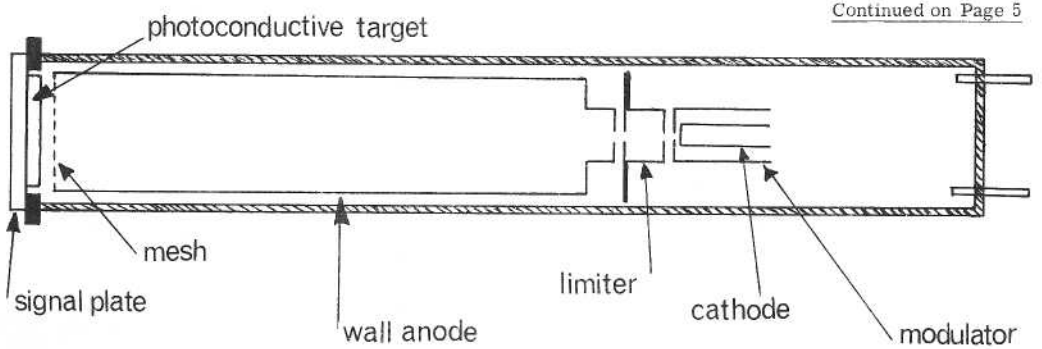
However, if the target voltage is increased too much the dark current (the leakage current which occurs when no light falls on the target) becomes high. This produces an unpleasant background effect to the picture.

Lag

One of the effects inherent with the vidicon tube is lag. When the picture changes suddenly from black to white or vice versa (because of a quick movement or pan, etc.) the photo conductive material takes a finite time to change its resistance. This gives rise to a residual image as the previous image fades. The new image also takes a finite time to form and on a quick pan or movement gives rise to print through.

The effect of lag can only be reduced. Lag is less severe with a high light level, i.e., 5 foot candles.

Continued on Page 5



200/250 VOLTS

S.P.S.

A 200v or 250v STABILIZED POWER SUPPLY UNIT

by M. Fairhurst

This S.P.S. is a high quality unit designed to give an H.T. supply of sufficient regulation, stabilization and low hum level for powering equipment handling asynchronous or 60 c/s signals. The unit follows normal series regulator practice and uses easily obtainable valves and as few components as was thought possible consistent with performance, reliability and safety of valves.

The unit consists of a voltage reference tube, a neon, V3, a double triode D.C. amplifier, V2, and a cathode follower series regulator, V1. The number of series valves can be increased according to current needs, the maximum current per valve being 200 mA. Above 200 mA the reliability of the unit might be impaired. The resistors in the grids and anodes of the series valve provide isolation between sections if individual triode characteristics vary - they usually do - and also a measure of protection if individual sections fail, which they also have a habit of doing at inopportune moments.

The cascode D.C. amplifier V2 amplifies the error between the output voltage and the reference ube V3 and feeds it to the grids of the series valve. The grid of V2b is fed from a potential divider across the output, the exact voltage being set by RV1. The cathode of V2b is at the potential of the reference, i.e., 85v. As neon tubes are inherently noisy devices, the cathode is decoupled by R12 and C2 to prevent the neon noise being amplified and fed onto the output. The capacitor C1 feeds any A.C. on the output directly to V2b grid, which gives the unit a good frequency response and therefore a very low level of hum (less than 1 mV with the D.C. supplier shown in Fig. 2). The top half of the amplifier V2a is operated under starvation conditions; anode current is 15μA, with correspondingly high gain; the overall gain of the pair is between 1500 and 2000. This high gain, together with the characteristics of the series valve, gives an output impedance of less than 0.5 Also, a drop in mains input of 15v gives a drop of only 0.5v on the output. To make the performance better a regulator would be needed on the heaters of the valves!

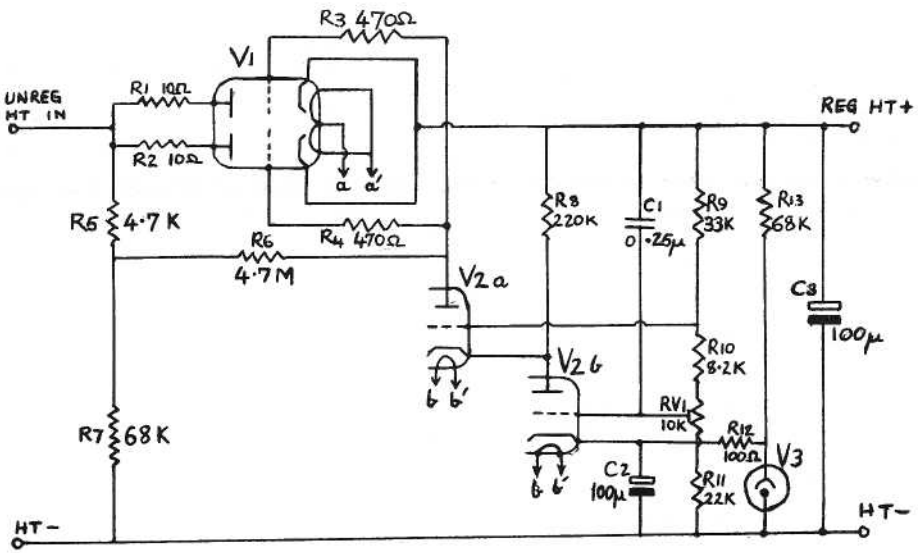
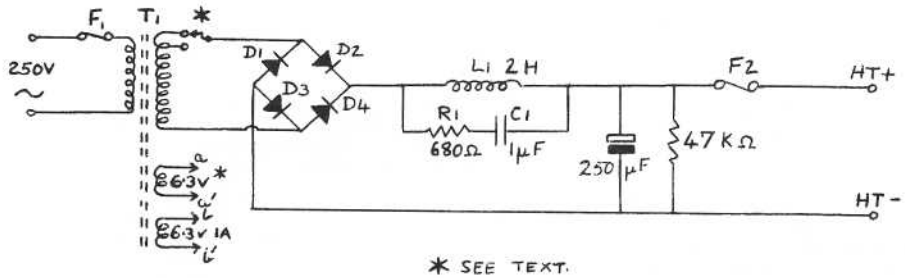


FIGURE 1.



* SEE TEXT.

FIGURE 2.

A suitable D.C. supply unit is shown in Fig. 2. The smoothing is by a simple choke input circuit. The inductance L1 is resonated by R.& C. to give a 100 c/s bandstop filter to remove ripple components. To keep the regulation of the choke input filter right down to no load current the 47KΩ resistor provides a bleed current. If a 250v supply is required the secondary winding should be 375v or 350v if a 200v supply is wanted. The rectifier diodes D1-4 should be of suitable voltage and current ratings for the supply required. The heater winding aa for the series valve must be an isolated winding due to the high cathode voltage of the series valve, and if more than one valve is being used then the current rating should be 2 amps per series valve used.

All resistors are $\frac{1}{2}$W except R7 and R13, which should be 1W. 5% high-stability types would be preferred for good performance and reliability. Valve types are as in the list below:-

V_1 6AS7, A1834 V_2 ECC83, 12AX7, V_3 85A2.

Continued from Page 3

The best way to reduce lag is to avoid rapid movements in the picture, particularly bright objects moving against a dark background and vice versa.

Operating Voltages

For best results (signal/noise, lag, resolution) beam current should lie between .25 and .3 μamps.

For studio use target volts should be between 25-60 volts. This is for a target illumination of 5 ft. candles, i.e., scene brightness of 100 ft. Lamberts and a lens of T2.2.

For specialised industrial use up to 100 volts target may be used. Great care should be taken, however, not to exceed the manufacturers ratings as certain types of tube may be damaged at much lower voltages.

VIDEO AMPLIFIER

by Dick Ashton

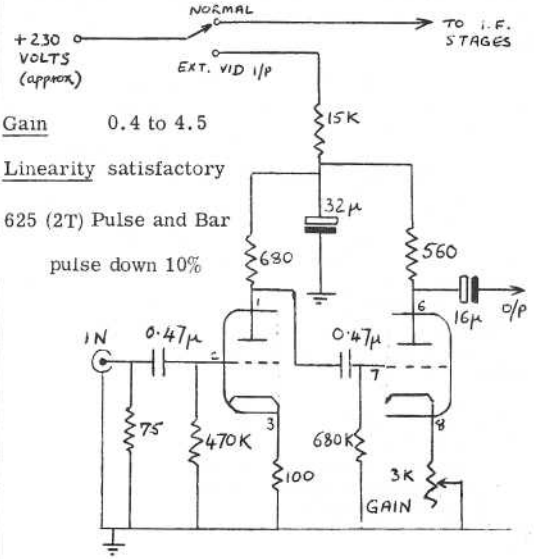
This circuit was evolved so that a standard television set can be used as a floor monitor when required. The amplifier accepts a 1 volt peak to peak signal and gives 3 volts output approximately. (This is compatible to the signal from an RF. detector.)

DATA:-

H.T. 230 volts approx.

Valve A 12AT7 was used.

Load 3.9 kΩ



Gain 0.4 to 4.5

Linearity satisfactory using 625 (2T) Pulse and Bar pulse down 10%

AMATEUR COLOUR

PROGRESS REPORT ON MIKE COX's COLOUR CAMERA

At various times, the idea of trying to build a simultaneous Colour Camera using three or four pick-up tubes was considered, only to be put firmly out of mind (and the worry that yours truly was slightly out of his as well!). However, at the end of 1964, two things happened. The first was the acquisition of some of the bankrupt stock of N.E.V. in the form of three vidicon scanning yokes. These yokes have needed some extensive work on shielding the target region of the tube, and on improving the quadrature between line and field scan axes, which on one yoke was in error by about 10 degrees! This has to be within a degree or so to bring it within range of the electrical skew controls, or registration of the three images will be poor. The second was that my professional activities became somewhat monochrome. Armed, as it were, with the basic ingredients, and wishing to keep my hand in colour matters, I plunged into the design of a 3 vidicon colour camera. The basic circuitry became a logical development of circuits already in use in an existing single vidicon camera. The largest difference was the availability at cheap prices of silicon epitaxial planar transistors with an ft of about 200 Mc/s. and good noise characteristics and selected beta over a 2-1 range. This type is the 2N 2926, available from MCP Electronics, Alperton, Middx. It has been used in the head amplifiers and in the gain stages of the processing amplifiers in the CCU, and found satisfactory so far (i.e., they work!).

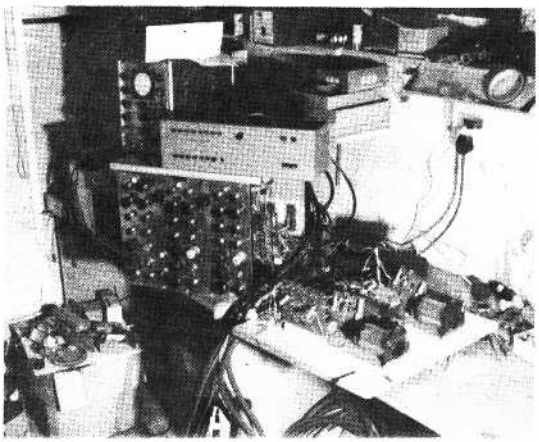
For no very good reason, the power supplies have been fixed at plus and minus 12 volts, making 24 volts available where necessary. Both these rails are regulated and can give up to 1 amp each. A snag has been found already in that, for stability reasons, the focus fields in each yoke must stay constant or at least change together, and hence the focus coils are connected in series. Unhappily for good focus, and a stiff beam with 270 volts on G_2 of the vidicons and about 400v on the field mesh, it was found that $7\frac{1}{2}$ volts was dropped across each focus coil, which leaves only $1\frac{1}{2}$ volts for the current stabiliser. An extra rail has to be arranged for this in the near future.

Scanning presented some problems. The golden rule in colour is to treat every function equally for each channel, and this rule applies particularly to scanning circuits, in order to achieve good registration of the three images.

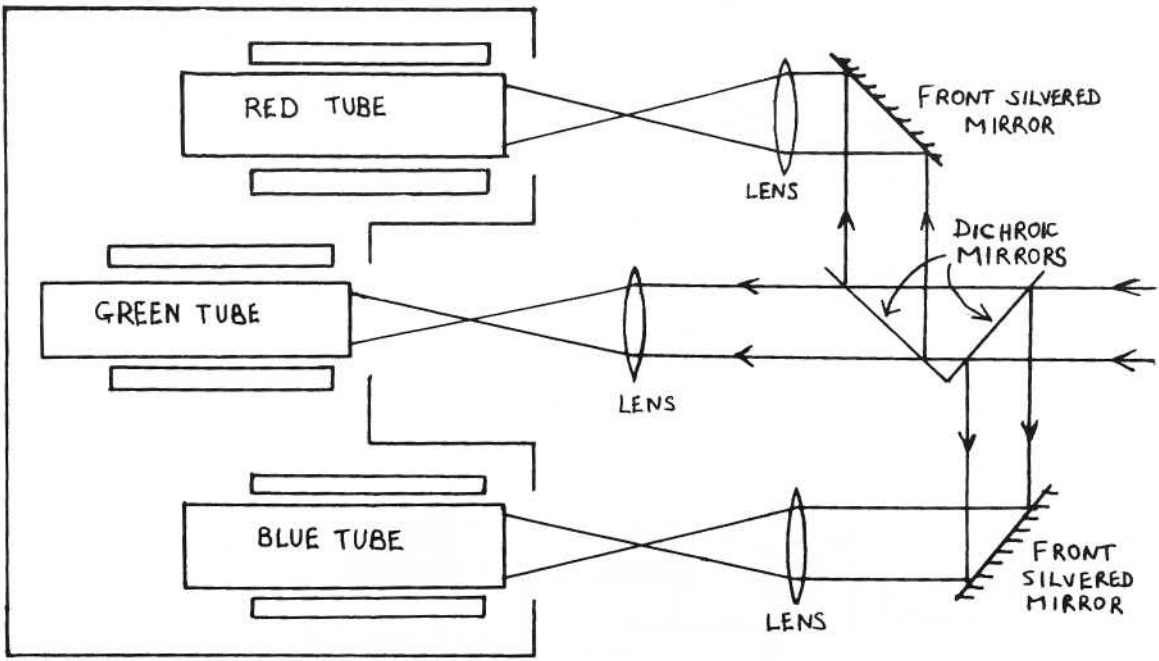
Line Scan follows fairly conventional practice, using a single output stage with the three yokes in parallel via their respective width coils (1/- each from G.W. Smith in Lisle St!). Centring is added via a trifilon choke, and skew (a bit of field sawtooth of either polarity) is mixed with the centring current. At the time of designing this stage, no single transistor was available. The current requirement is just under an amp peak to peak (to allow 300 mA pk-pk per yoke), and this, with 625 line flyback time gives a pulse of about 80 volts at the collector. Various transistors, such as the AU103, would do this without even trying, but I hadn't got one!

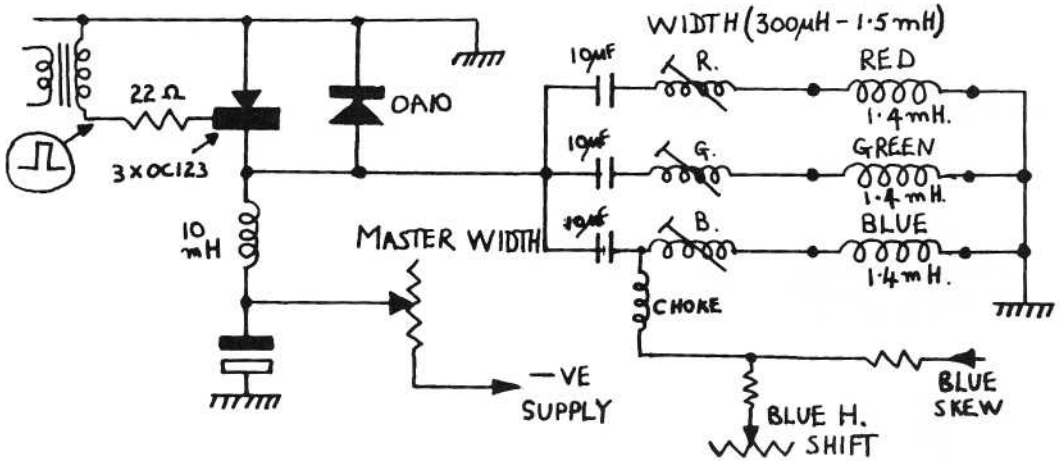
Accordingly, 3 OC123's were tried in parallel. The OC123 is a "core driver" device, germanium, PNP which is commonly used as a vidicon line scan transistor. To my great surprise, these can just scan the vidicons on 625 lines, although they do get a little warm! The efficiency diode used is an OA_{10}, but a BY118 might well be better.

The field scan represents a departure from traditional practice; time and experience will show how valid this is. In general, the same current waveform should flow through all the yokes, although some individual adjustments are necessary. This requires a large voltage swing, and could be more than the rails could give without a bulky transformer. Also some camera cable problems occur. The solution adopted is to feed three highly fed back current amplifiers from a common bootstrap sawtooth generator. This also feeds a field sawtooth to the skew circuits.

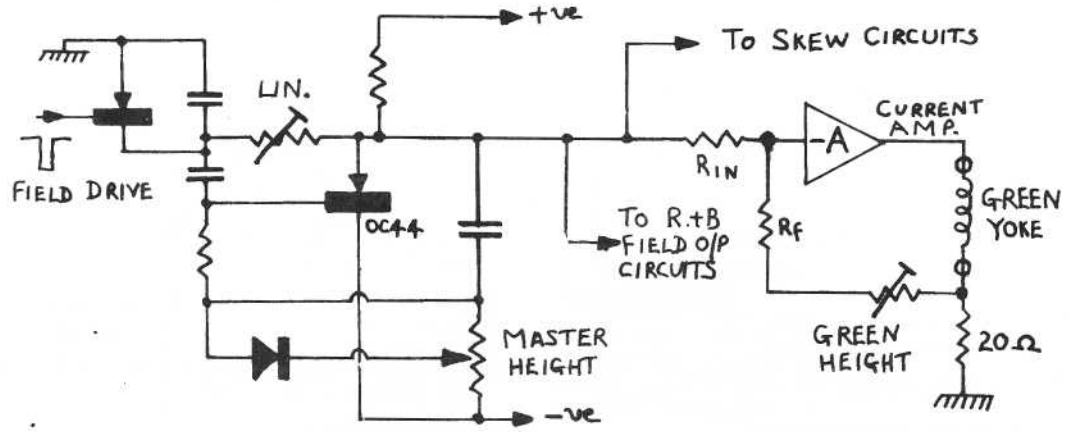


BASIC OPTICAL ARRANGEMENTS

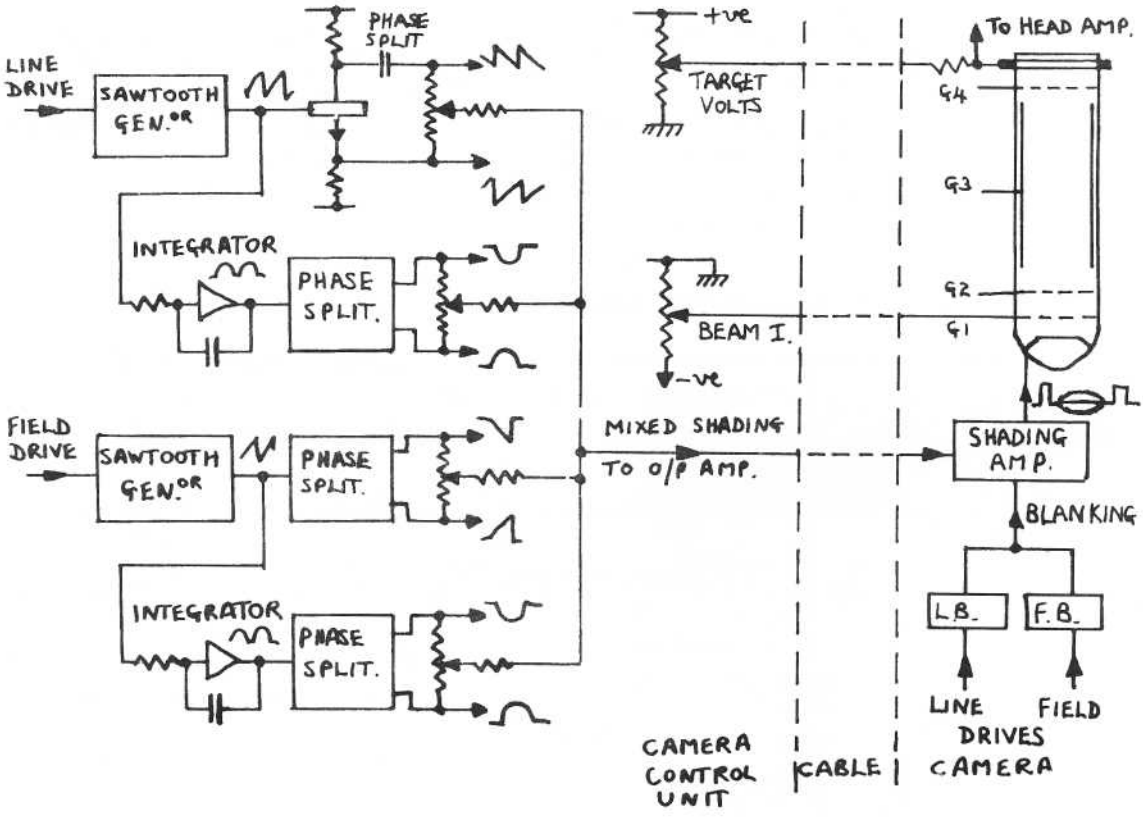




BASIC LINE SCAN CIRCUIT



Basic Field Scan Circuit



Shading Arrangements.

Vidicon supplies at +385v, +300v and -85v are neon stabilised, and derived from simple rectifiers from a winding on the mains transformer. It may surprise readers, but the beam current in a vidicon can be quite high - of the order of tens of microamps - and with three tubes working, it is essential that the potentials remain absolutely constant if the tubes are to be set up independently.

A useful feature is a beam switch on each tube, which enables the beam to be switched on or off, without altering a carefully adjusted setting of the beam control. The switch also operates a pilot light with the colour of the channel, so that when all tubes are working, red, blue and green pilot lights appear on the panel.

Vidicon tubes exhibit shading effects in which the sensitivity varies over the scanned area. In black and white cameras this does not matter very much, but in a colour camera it is asking too much to expect that our three vidicons all have the same shading characteristics. If they do not, this introduces colour shading of a rather horrid nature. Correction for this error can be applied by effectively varying the target voltage with appropriate correction waveform made up of line and field sawteeth and parabolae. This is not as difficult as it sounds, as it is the cathode-target potential which governs the sensitivity of the tube. Hence, the target potential can be fixed by a target control, and the shading signals can be fed to the Vidicon Cathode. Four basic generators are used which feed the controls for each tube. This accounts for 12 controls out of the 44 or so on the CCU front panel. At present vidicon blanking (mixed line and field drive) is mixed with the shading signal in a simple transistor amplifier. It seems to work adequately so far.

So far, all the electronic side is working, and crude colour pictures of a sort have been obtained with the three vidicons and their individual lenses (3 Japanese enlarging lenses, 75mm, f/3.5) focussed on a colour chart, and with Gelatine filters to provide the colour separation. Work is currently progressing on a thick plate to carry the three yokes; on the carriage assembly and the optical bench which carries the three objective lenses, the two dichroic mirrors and the front silvered mirrors to bend the light back again.

In the photograph, the CCU is shown on the left, with the picture and waveform switches above it, while on the right is seen the blockboard lash-up, with line scan, 3 head amplifiers, the three yokes and the shading amplifier. Note that 2 camera cables are used to provide all the ways needed.

If all goes well, it will be shown working at the Convention.

If any reader is interested in further reading on colour cameras of this type, the reference below may help.

"A Vidicon Camera for Industrial Colour Television"
I.J.P. James, Journal Brit. I.R.E. (Now I.E.R.E.), Vol. 19, No. 3, March, 1959.

LECTURE TO THE SURREY RADIO CONTACT CLUB

On Tuesday, 11th January, a talk was given to the SRCC on amateur television. This was accompanied by a demonstration from two vidicons.

The Chairman of the SRCC, Mr. Wynn (G8TB), introduced J. Noakes (G6ABA/T) and M. Bues (G60-PB/T) to an audience of some 50 members of the SRCC who sat interested throughout the lecture despite the bright lights for the cameras.

John Noakes gave a general description of an amateur television system from vidicon pick-up tube to vision modulator giving comparisons to amateur sound practice.

John Noakes described his equipment, which he operates on 625, followed by a description by M. Bues of his equipment which was working on 405 lines.

THE BRITISH AMATEUR TELEVISION CLUB

at 70, Brompton Road, London SW3

CONVENTION

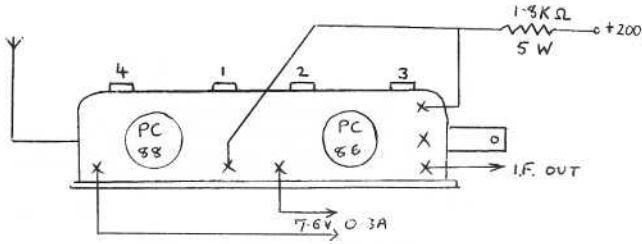
October 8th

U.H.F. tuners

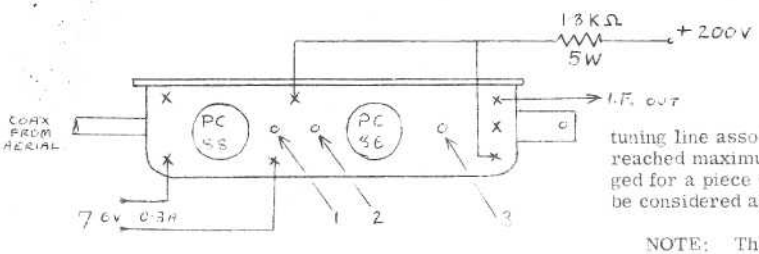
U.H.F. TUNERS

Re-adjustment to cover down to 428 Mc/s.

No circuit changes are necessary. Wire up the tuner as shown in the drawing. Connect the tuner o/p to the aerial socket of a television receiver adjusted to Ch 1 or 2 (not the local TV channel!). Unscrew trimmer 4 and adjust the I.F. coil together for max. noise on the receiver. It may be necessary to remove a turn or two from the coil. Now find a signal below about 650 Mc/s, such as the local BBC 2 transmitter, a signal generator harmonic, etc.



HOPT / A.B.



PHILIPS.

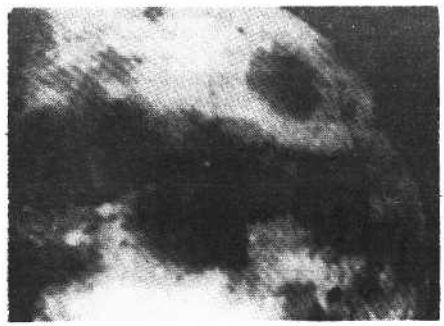
Next screw in trimmer 3 half a turn and find the signal again with the main tuning shaft, turning it anti-clockwise. Peak up the signal with trimmers 1, 2 and 4 (where fitted). Repeat this until one of the trimmers reaches maximum capacity. The tuner should now cover the 70 cm band with the main tuning shaft almost fully anti-clockwise. Find a signal on 70 cms and peak this up with trimmers 1, 2 and (if fitted) 4.

If the tuner has a balanced 300-Ω input, this should be removed together with its associated balum transformer. The brading of the aerial cable should then be connected to the tuner chassis and the inner connected to the cathode (Pins) of the R.F. stage (PC88) via a 1,000 PF disc capacitor. The lead lengths should be kept as short as possible.

It has been found that with some A.B. metals and Hopt tuners they will not quite reach down to 70 cms using the above method.

If this happens, the tuning line associated with the trimmer which has reached maximum capacitance first should be changed for a piece of 18 SWG copper wire. This should be considered as a last resort only.

NOTE: These instructions apply to Phillips, Hopt and A.B. Metal tuners.

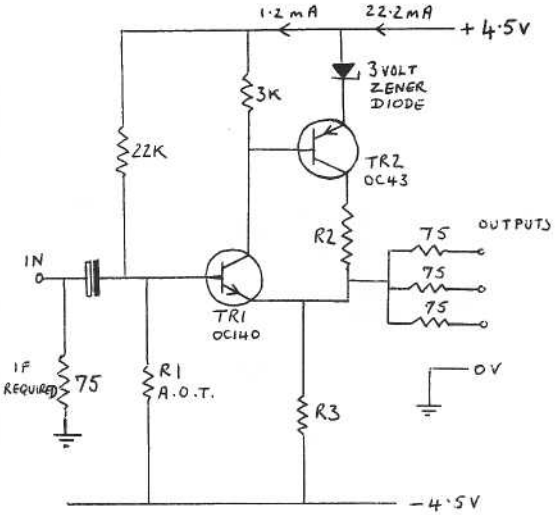


This photo shows some of the Moon's surface as seen through a vidicon camera attached to an astronomical telescope. It illustrates yet another application for amateur television. This photo was taken by Keith Miller, who is now resident in Victoria, Australia.

A TRANSISTORIZED DISTRIBUTION AMPLIFIER

by Martin Nutt.

This amplifier has a high input impedance and provides three isolated outputs at 75Ω. The voltage gain is one (OdB) or two (6dB) by suitable choice of resistor values. The response is satisfactory for 405 line working, and acceptable at 625 lines. A slight overshoot may be seen at 625.



GAIN 0dB	GAIN 6dB
R1 = 10K	R1 = 4·7K
R2 = 100Ω	R2 = 150Ω
R3 = 100Ω	R3 = 47Ω

Layout is not critical, and construction on Veroboard is convenient.

R1 is marked AOT (Adjust on Test) and is chosen to make the output voltage zero when there is no input.

If a balanced power supply is not available, the amplifier may be fed from a single 9 volt rail, the outputs being taken via a capacitor of at least 100 μF. This will cause slight field shading, but subsequent DC restoration or clamping will cure this.

Specification:

Input impedance 5kΩ approx.
Output impedance 75Ω.
Frequency response = 1dB to 4.5 Mc/s.
- 4 at 5 Mc/s.
Tilt (for unbalanced power supply) 10% at 50 c/s.

With a balanced power supply, output is DC coupled and the tilt is negligible.

PRINCIPLES OF TELEVISION ENGINEERING

Volumes I and II
by R. C. Whitehead, A.M.I.E.E., published by Iliffe at 25/- and 35/- respectively.

Written in an easily understood way, only an elementary knowledge of physics and mathematics is required although a slight knowledge of sound broadcasting is assumed. Appendices provide more comprehensive treatment of most topics. Only valve circuitry is considered.

Volume I deals with fundamentals, including Photocells, Aspect ratios, Scanning, Video and r.f. signals, Gamma, Synchronisation and Scanning frequencies.

Volume II deals with techniques in Studio centres, Transmitters, Receivers including aerials, amplifiers, cable circuits, etc.

Altogether a useful and comprehensive work, discussing most topics in television engineering and worthwhile investment for enthusiasts.

Reviewed by John Warner

Errata. In CQ-TV 57, Peter Rushworth's callsign was given as G6RVB/T. It should have been G6RYB/T.

FRENCH AMATEUR LICENCING REGULATIONS.

We are told by a French member that French amateurs have just been authorised to transmit vision on 70 cm. up to 70 watts power using either 625 or 405 lines.

FROM THE POST BAG

We start off with news of Pete Hirst, G6ABT/T, who is now in Verden, Western Germany. He writes, "If I can be of any help to contact anyone over here, I will be only too pleased to help. I have stimulated interest at the unit radio club in A.T.V. and as we have a 2 meter rig, we are constructing a trippler for 70 cm, so we should soon be on the air. The club call sign is DL2VR".

R.T. Mills of the Sheffield Amateur Radio Club has gained his R.A.E. and is plugging on with morse practice, but will try television as soon as he has an operational camera.

F9MF has a camera which will produce positive or negative pictures. He operates on 70 cm. each evening up to 2200.

Dick Ashton has sent a summary of Australian A.T.V. which is included in this issue. He recommends two books:-

TELEVISION BROADCASTING, by
Howard A. Chinn, published by McGraw-Hill.

and

PRINCIPLES AND PRACTICE OF TELECASTING
by H.E. Ennes and H.W. Sams.

The first book is the T.V. engineering bible in Australia and America, to quote Dick.

Graham Shirville, G8ADV, has the use of a vidicon camera when at home near Peterborough, and hopes to get his /T later this year.

Dave Jones, G6LYF/T, is operating with a screen modulated QQV06-40 trebler, the modulation being either vision or sound at the flip of a switch. Dave exchanges pictures with G6SAU/T over a path of about five miles but "owing to the oblique cussedness of inanimate objects, a hill reduces the vision signal to a very noisy mid-grey", as Dave puts it. G6SAU/T is ideally positioned to transmit pictures of glorious views of Torbay.

Stuart Crisp writes to say that he has constructed a 405 line interlaced S.P.G., a flying spot scanner and two monitors. The next task is a vidicon camera.

G. Gaiger is now licenced G8AIZ and hopes to be using the Practical Television Sound/Vision transmitter and home-brew converter using AF139's in the RF mixer and oscillator stages, and ADT140's in the two IF stages. This feeds a television receiver.

R. Wallace of 15, Southdown Park, Hayward Road, Drayton, Berks., is building the Wireless World oscilloscope and asks if anyone can help with the CRT. The types suitable are Mullard DN7-78 and Sylvania-Thorn SE3A.

Joseph Czerniak, W8NWU, has built the vidicon camera which was described in Volume 2 of ATV Experimenter. The transmitter used runs 70 watts input at 440 Mc/s to a dual helical antenna.

Alan Masson, GM3PSP, recently gave a talk to the Lothians Radio Society which was a great success His flying spot scanner is working and he is now making a vidicon camera.

This graphic appears on the cover of the first edition of the ATA Magazine which came out this March. This publication is produced by the Belguim Groupement de télévision d amateur whose president is W. Van Marck (ON4RT). Those who would like to subscribe to this magazine should write to the Secretary:-

Groupement de Télévision d'Amateur,
Oude Brusselseweg 119,
GENTBRUGGE,
BELGUIM.

Les membres de La B.A.T.C. vous souhaitent un grand succes.

Flying-Spot Scanning.

Very satisfactory results can be obtained with much cheaper equipment; a flying-spot scanner using 5FP7 or MW22.14 scanner and 931A photocell can be built for about £10. Such units will handle positive or negative transparencies, or can be adapted for telecine.

Club Publications and Facilities.

The Club has published a booklet on amateur television which is now almost out of print, but a quarterly magazine, "CQ-TV", is issued free to members, containing circuits, constructional articles, photographs, and news of member's activities. A few back copies are available at 2/- each from the Hon. Secretary, and earlier editions are available on 35 mm. film strips at 10/6 each, each of which consists of ten issues of CQ-TV. These are available from Grant Dixon.

Grant Dixon also has an almost complete set of Mullard Technical Communications which are available on loan.

Headed Note Paper and Lapel Badges may be purchased from Malcolm Sparrow. The Lapel Badges are available as either buttonhole or brooch types at 3/6d. Also to special order these are available with call sign attached.

Plastic Adhesive Badges are also available from Malcolm Sparrow. These are for sticking to amateur equipment and cost 1/6d.

Tape Lectures.

Some recorded lectures are available on loan from Grant Dixon. The titles include:-

Flying Spot Scanning
Getting Started in Amateur Television
Slow Scan Television
Amateur Colour Television
70 cm.Reception.

Technical Queries.

These should be as precise as possible and will be answered by volunteers in their spare time. B.A.T.C. cannot supply full circuits and comprehensive data other than those which appear in CQ-TV. Queries should be sent to the Hon. Secretary.

Components.

Members requiring special components are invited to register their needs with the Hon. Secretary. Help will be given whenever possible, but this does not cover items which may be purchased in the normal way.

Club Convention.

The Club holds a Convention in London once every two years. During the Convention, which takes place on a Saturday, the general meeting is held, when officers of the club are elected, and any other matters discussed freely.

TV References.

New members will find the following books helpful:-

BBC TV Engineering series (4 vols.), Amos and Birkinshaw. Published by Iliffe.

TV Engineering D.G. Fink. Published by McGraw-Hill.

TV Engineering Handbook. Edited by D.G. Fink. Published by McGraw-Hill.

Colour Television. P.S. Carnt & G.B. Townsend, Published by Iliffe.

Sound & TV Broadcasting - General Principles. K. R. Sturley. Published by Iliffe.

CQ-TV

Contributions to the magazine are welcome and members are asked to send in news of their activities, and in particular, to send in articles or any practical hints they may pick up in the course of their amateur TV experiments.

Membership.

Membership costs 10s. ($2) per annum, payable on the 1st January. New members are asked to enclose 1s. per month remaining of the current year plus 10s. for the following year.

Details are available from the Hon. Secretary of B.A.T.C.